Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 - 7 (cancelled)

Claim 8. (previously presented) The method of claim 32 , wherein the mixing comprises rotating the chamber.

Claim 9. (cancelled)

Claim 10. (previously presented) The method of claim 8, further comprising: forming the aluminum oxynitride into a transparent structure.

Claim 11. (original) The method of claim 10, wherein forming the aluminum oxynitride comprises:

forming a green body comprising the aluminum oxynitride; and

sintering the green body.

Claim 12. (original) The method of claim 11, further comprising: isostatically pressing the sintered green body under heat.

Claim 13. (previously presented) The method of claim 32, wherein the aluminum oxynitride comprises $Al_{23-1/3x}O_{27+x}N_{5-x}$, where $0.429 \leq x \leq 2$.

Claims 14 - 31. (cancelled)

Claim 32. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber ~~having a predetermined temperature~~;

(b) introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting the aluminum oxide particles and carbon particles introduced into the provided chamber with nitrogen, comprising:

~~while~~ mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles; and

maintaining ~~with~~ the ~~predetermined temperature of the~~ chamber ~~being maintained~~ at a ~~constant at the predetermined~~ temperature sufficient to convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride; and

(d) removing the aluminum oxynitride from the chamber.

Claim 33. (currently amended) The method recited in claim 32 wherein the ~~predetermined~~ temperature is about 1700-1900°C.

Claim 34. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber ~~having a predetermined temperature~~;

(b) introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting the aluminum oxide particles and carbon particles introduced into the provided chamber with nitrogen, comprising:

~~while continuously~~ mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles;

maintaining ~~with the predetermined temperature of the~~ a chamber temperature ~~being~~ maintained constant ~~at the predetermined temperature~~ during conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride; and

(d) removing the aluminum oxynitride from the chamber.

Claim 35. (currently amended) The method recited in claim 34 wherein the ~~predetermined~~ temperature is about 1700-1900°C.

Claim 36. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber ~~having a predetermined temperature~~;

(b) ~~continuously~~ introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting aluminum oxide particles and carbon particles ~~continuously~~ introduced into the provided chamber with nitrogen, comprising:

~~while continuously~~ mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles;

maintaining ~~with~~ the ~~temperature of the~~ chamber at a ~~being maintained~~ constant temperature ~~at the provided predetermined temperature~~ during conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride; and

(d) continuously removing the aluminum oxynitride from the chamber.

Claim 37. (currently amended) The method recited in claim 36 wherein the ~~predetermined~~ temperature is about 1700-1900°C.

Claim 38. (previously presented) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting the aluminum oxide particles and carbon particles introduced into the provided chamber with nitrogen, comprsing:

~~while~~ mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles with the chamber; and

providing ~~having~~ a temperature about 1700-1900°C during conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride; and

(d) removing the aluminum oxynitride from the chamber.

Claim 39. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting the aluminum oxide particles and carbon particles introduced into the provided chamber with nitrogen, comprising:

~~while continuously~~ mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles;

having ~~with~~ the chamber ~~having~~ at a temperature selected to convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride during the conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride; and

(d) removing the aluminum oxynitride from the chamber.

Claim 40. (previously presented) The method recited in claim 39 wherein the temperature of the chamber is about 1700-1900°C.

Claim 41. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) ~~continuously i~~ntroducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting aluminum oxide particles and carbon particles ~~continuously~~ introduced into the provided chamber with nitrogen, comprsing:

~~while continuously~~ mixing the aluminum oxide particles and carbon particles within the provided chamber,

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles with ~~the temperature of~~ the chamber; and

having the chamber at a temperature ~~being~~ maintained and sufficient to ~~to~~ convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride during the conversion process.

Claim 42. (previously presented) The method recited in claim 36 wherein the temperature is about 1700-1900°C.

Claim 43. (previously presented) The method recited in claim 41 including removing the aluminum oxynitride from the chamber.

Claim 44. (previously presented) The method recited in claim 41 including continuously removing the aluminum oxynitride from the chamber.

Claim 45. (previously presented) The method recited in claim 43 wherein the temperature is about 1700-1900°C.

Claim 46. (previously presented) The method recited in claim 44 wherein the temperature is about 1700-1900°C.

Claim 47. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) continuously introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting aluminum oxide particles and carbon particles continuously introduced into the provided chamber with nitrogen, comprising:

~~while~~ continuously mixing the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles;

maintaining ~~with the temperature of~~ the chamber ~~being~~ at a temperature ~~maintained~~ to continuously convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride and wherein said the temperature of the chamber is maintained during the conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

Claim 48. (previously presented) The method recited in claim 47 wherein the temperature is about 1700-1900°C.

Claim 49. (previously presented) The method recited in claim 47 including removing the aluminum oxynitride from the chamber.

Claim 50. (previously presented) The method recited in claim 47 including continuously removing the aluminum oxynitride from the chamber.

Claim 51. (previously presented) The method recited in claim 50 wherein the temperature is about 1700-1900°C.

Claim 52. (previously presented) The method recited in claim 49 wherein the temperature is about 1700-1900°C.

Claim 53. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) continuously introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting aluminum oxide particles and carbon particles continuously introduced into the provided chamber with nitrogen, comprising:

~~while~~ continuously mixing and heating the provided chamber with the aluminum oxide particles and carbon particles within the provided chamber;

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles; and

~~with~~ wherein ~~the~~ heating of the chamber ~~being~~ is maintained to convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride and wherein said the temperature of the chamber is maintained during the conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

Claim 54. (currently amended) A method of making aluminum oxynitride, the method comprising:

(a) providing a chamber;

(b) continuously introducing aluminum oxide particles and carbon particles into the provided chamber;

(c) reacting aluminum oxide particles and carbon particles continuously introduced into the provided chamber with nitrogen, comprising:

~~while~~ heating the provided chamber;

~~and~~ continuously mixing the aluminum oxide particles and carbon particles within the provided chamber;\

~~and while~~ passing nitrogen gas over the mixing aluminum oxide particles and carbon particles; and

including ~~with the~~ heating of the chamber ~~being selected~~ to continuously convert the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride and wherein said the temperature of the chamber is maintained during the conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

Claim 55 (previously presented) The method recited in claim 54 wherein the mixing comprises rotating the chamber.

Claim 56. (previously Presented) The method recited in claim 54 wherein the heating is at a temperature of about 1700°C or higher.

Claim 57. (previously presented) The method recited in claim 56 wherein the mixing comprises rotating the chamber.

58. (new) A method of making aluminum oxynitride, the method comprising: (a) introducing aluminum oxide particles and carbon particles into a chamber; and (b) mixing the aluminum oxide particles and carbon particles within the chamber while passing nitrogen gas over the aluminum oxide particles and carbon particles during the mixing with the temperature of the chamber being maintained constant during conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

59. (new) The method recited in claim 58 wherein the temperature is in a range of about 1700-1900 °C.

60. (new) A process for making aluminum oxynitride comprising the steps of (a) providing a chamber, (b) introducing aluminum oxide particles and carbon particles into

the chamber, (c) mixing the aluminum oxide particles and carbon particles while passing nitrogen gas thereover at a temperature sufficient to form the aluminum oxynitride, and (d) removing said aluminum oxynitride from the chamber.

61. (new) The process recited in claim 60 wherein the temperature is within a range of about 1700-1900 °C.

62. (new) The process recited in claim 60 wherein the temperature is held substantially constant.

63. The process recited in claim 62 wherein the temperature is within a range of about 1700-1900 °C.

64. (new) The process recited in claim 60 wherein the aluminum oxide particles and carbon particles are introduced continuously while said aluminum oxynitride is removed continuously.

65. (new) The process recited in claim 64 wherein the temperature is within a range of about 1700-1900 °C.

66. (new) The process recited in claim 64 wherein the temperature is held substantially constant.

67. (new) The process recited in claim 66 wherein the temperature is within a range of about 1700-1900 °C.

68. (new) The process recited in claim 60 wherein mixing of the aluminum oxide particles and carbon particles while passing nitrogen gas thereover is at a temperature and time sufficient to form the aluminum oxynitride.

69. (new) The process recited in claim 68 wherein the temperature is within a range of about 1700-1900 °C.

70. (new) The process recited in claim 68 wherein the temperature is held substantially constant.

71. (new) The process recited in claim 70 wherein the temperature is within a range of about 1700-1900 °C.

72. (new) The process recited in claim 68 wherein the aluminum oxide particles and carbon particles are introduced continuously while said aluminum oxynitride is removed continuously.

73. (new) The process recited in claim 72 wherein the temperature is within a range of about 1700-1900 °C.

74. (new) The process recited in claim 72 wherein the temperature is held substantially constant.

75. (new) The process recited in claim 74 wherein the temperature is within a range of about 1700-1900 °C.

76. (new) A method of making aluminum oxynitride, the method comprising: (a) introducing aluminum oxide particles and carbon particles into a chamber; and (b) mixing the aluminum oxide particles and carbon particles within the chamber while passing nitrogen gas over the aluminum oxide particles and carbon particles during the mixing with the temperature of the chamber being maintained sufficient during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

77. (new) The process recited in claim 76 wherein the temperature is within a range of about 1700-1900 °C during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

78. (new) The process recited in claim 76 wherein the temperature is held substantially constant during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

79. (new) The process recited in claim 78 wherein the temperature is within a range of about 1700-1900 °C during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

80. (new) The process recited in claim 76 wherein the aluminum oxide particles and carbon particles are introduced continuously while said aluminum oxynitride is removed continuously.

81. (new) The process recited in claim 80 wherein the temperature is within a range of about 1700-1900 °C during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

82. (new) The process recited in claim 80 wherein the temperature is held substantially constant during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.

83. (new) The process recited in claim 82 wherein the temperature is within a range of about 1700-1900 °C during the entire conversion of the aluminum oxide particles, carbon particles and nitrogen into the aluminum oxynitride.